

WHAT IS CLAIMED IS:

Add at 1. An electronic program information preparing and transmitting apparatus, comprising:

5 electronic program information preparing means for preparing general electronic program information, in which electronic program information of a plurality of broadcast service enterprisers is described on a general level, and preparing individual electronic program information, in which the electronic program information of one broadcast service  
10 enterpriser is described on an individual level, for each broadcast service enterpriser, and

15 electronic program information transmitting means for transmitting the general electronic program information of the broadcast service enterprisers and the individual electronic program information of the broadcast service enterprisers prepared by the electronic program information preparing means.

2. An electronic program information preparing and  
20 transmitting apparatus according to claim 1 in which the general electronic program information and the individual electronic program information corresponding to each broadcast service enterpriser are prepared according to electronic program information detailed degree setting  
25 information which indicates a detailed degree of the

individual electronic program information described on the individual level and a detailed degree of the general electronic program information described on the general level.

5 3. An electronic program information preparing and transmitting apparatus according to claim 1 in which the general level corresponds to a low detailed degree, and the individual level corresponds to a high detailed degree..

10 4. An electronic program information preparing and transmitting apparatus according to claim 1 in which the electronic program information transmitting means comprises:

15 electronic program information outputting means for outputting the general electronic program information of the broadcast service enterprisers and the individual electronic program information of the broadcast service enterprisers prepared by the electronic program information preparing means; and

20 electronic program information multiplexing means for multiplexing the general electronic program information of the broadcast service enterprisers and one piece of individual electronic program information of one broadcast service enterpriser output by the electronic program information  
25 outputting means to produce combined electronic program

information for each piece of individual electronic program information, and transmitting each piece of combined electronic program information to a viewer through a transmission line.

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5. An electronic program information preparing and transmitting apparatus according to claim 1 in which transport stream specifying information indicating a transport stream is prepared by the electronic program information preparing means for each piece of individual electronic program information of one broadcast service enterpriser, and the electronic program information transmitting means comprises:

electronic program information outputting means for outputting the pieces of general electronic program information of the broadcast service enterprisers, the pieces of individual electronic program information of the broadcast service enterprisers and the pieces of transport stream specifying information prepared by the electronic program information preparing means; and

electronic program information multiplexing means for multiplexing the pieces of general electronic program information of the broadcast service enterprisers and one piece of individual electronic program information of one broadcast service enterpriser output by the electronic program

information outputting means to produce combined electronic  
program information for each piece of individual electronic  
program information, carrying each piece of combined  
electronic program information in a transport stream, which is  
5 indicated by the piece of transport stream specifying  
information corresponding to the piece of individual  
electronic program information multiplexed in the piece of  
combined electronic program information, and transmitting the  
pieces of combined electronic program information carried in  
10 the transport streams to the viewer.

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6. An electronic program information preparing and  
transmitting apparatus according to claim 5 in which  
enterpriser service correspondence information, which  
15 indicates the correspondence between each broadcast service  
enterpriser and a channel service carried in one transport  
stream is prepared by the electronic program information  
preparing means, and the transport stream specifying  
information is prepared according to the enterpriser service  
20 correspondence information.

7. An electronic program information preparing and  
transmitting apparatus according to claim 6 in which one or  
more television programs provided by each broadcast service  
25 enterpriser are carried in one transport stream of the

broadcast service enterpriser and are broadcasted on the viewer side, and the transport stream for carrying each piece of combined electronic program information, in which one piece of individual electronic program information corresponding to one broadcast service enterpriser is multiplexed, agrees with that of the broadcast service enterpriser.

8. An electronic program information preparing and transmitting apparatus according to claim 1 in which one piece of individual electronic program information of a particular broadcast service enterpriser and pieces of general electronic program information of broadcast service enterprisers other than the particular broadcast service enterpriser are transmitted to the viewer for each piece of individual electronic program information by the electronic program information transmitting means.

9. An electronic program information preparing and transmitting apparatus according to claim 1 in which the electronic program information preparing means comprises:  
common electronic program information preparing means for preparing common electronic program information;  
non-common electronic program information preparing means for preparing first non-common electronic program information not common to the broadcast service enterprisers on the

individual level from the electronic program information of  
one broadcast service enterpriser for each broadcast service  
enterpriser and preparing second non-common electronic program  
information not common to the broadcast service enterprisers  
5 on the general level from the electronic program information  
of one broadcast service enterpriser for each broadcast  
service enterpriser, and

the electronic program information transmitting means  
comprises:

10 electronic program information multiplexing means for  
multiplexing the common electronic program information  
prepared by the common electronic program information  
preparing means, one piece of first non-common electronic  
program information of a particular broadcast service  
15 enterpriser prepared by the non-common electronic program  
information preparing means and pieces of second non-common  
electronic program information of broadcast service  
enterprisers other than the particular broadcast service  
enterpriser with each other to produce multiplexed electronic  
20 program information for each particular broadcast service  
enterpriser; and

multiplexed electronic program information transmitting  
means for transmitting the multiplexed electronic program  
information produced by the electronic program information  
25 multiplexing means to the viewer for each particular broadcast

service enterpriser.

10. An electronic program information preparing and transmitting apparatus according to claim 9 in which transport stream specifying information indicating a transport stream is prepared by the non-common electronic program information preparing means for each broadcast service enterpriser, and the multiplexed electronic program information, in which one piece of first non-common electronic program information of one broadcast service enterpriser is multiplexed, is carried in the transport stream indicated by the transport stream specifying information corresponding to the broadcast service enterpriser.

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11. An electronic program information preparing and transmitting apparatus according to claim 1 in which a plurality of channel services are listed in the general electronic program information or in the individual electronic program information of one broadcast service enterpriser prepared by the electronic program information preparing means, and service specifying information indicating the specifying of a particular channel service is arranged in the general electronic program information or the individual electronic program information of the broadcast service enterpriser to automatically select the particular channel

service from the channel services in cases where the broadcast service enterpriser is selected.

12. An electronic program information preparing and  
5 transmitting apparatus according to claim 11 in which a viewer attribute is arranged in the general electronic program information or in the individual electronic program information as the service specifying information, a particular channel service, of which a viewer attribute agrees  
10 with an attribute of the viewer, being selected from the channel services.

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13. An electronic program information preparing and  
transmitting apparatus according to claim 11 in which a genre  
15 is arranged in the general electronic program information or in the individual electronic program information as the service specifying information, a particular channel service, of which a genre agrees with a viewer favorite genre, being selected from the channel services.

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14. An electronic program information preparing and  
transmitting apparatus according to claim 1 in which pieces of  
information of a plurality of television programs are  
described in the individual electronic program information or  
25 the general electronic program information, and program link



describing information indicating that an actual television  
program actually broadcasted is the same as one or more  
virtual television programs not actually broadcasted is  
arranged in the individual electronic program information or  
5 the general electronic program information.

15. An electronic program information preparing and  
transmitting apparatus according to claim 14 in which  
reference information for referring to information of an  
10 actual television program actually broadcasted is added to  
information of one or more virtual television programs not  
actually broadcasted, and the reference information is  
transmitted.

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15 16. An electronic program information preparing and  
transmitting apparatus according to claim 1 in which pieces of  
information of one or more television programs are listed in  
the general electronic program information or the individual  
electronic program information of each broadcast service  
20 enterpriser prepared by the electronic program information  
preparing means, and a transmission bandwidth is described as  
the information of each television program.

17. An electronic program information preparing and  
25 transmitting apparatus according to claim 16 in which

information indicating one broadcast service enterpriser,  
information of a schedule and information of a television  
channel are described as the information of each television  
program on condition that a display width of each television  
5 program is proportional to the transmission bandwidth of the  
television program.

18. An electronic program information preparing and  
transmitting apparatus according to claim 1 in which one or  
10 more main channel services and one or more sub-channel  
services subordinate to one main channel service are  
hierarchically listed in the general electronic program  
information or in the individual electronic program  
information prepared by the electronic program information  
15 preparing means.

19. An electronic program information preparing and  
transmitting apparatus according to claim 1 in which one or  
more main television programs and one or more sub-television  
20 programs subordinate to one main television program are  
hierarchically listed in the general electronic program  
information or the individual electronic program information  
prepared by the electronic program information preparing  
~~means.~~

20. An electronic program information preparing and transmitting apparatus according to claim 1 in which one or more main television programs or main channel services and one or more sub-television programs or sub-channel services subordinate to one main television program or main channel service are hierarchically listed in the general electronic program information or the individual electronic program information prepared by the electronic program information preparing means, broadcasting times of the sub-television programs or sub-channel services subordinate to the main television program or main channel service are the same as each other, and the main television program or main channel service is not actually broadcasted.

21. An electronic program information preparing and transmitting apparatus according to claim 18 in which the general electronic program information including information of the main channel services is transmitted through all transmission lines, and the individual electronic program information including information of the sub-channel services is transmitted through a particular transmission line in which television programs of the sub-channel services are actually transmitted.

22. An electronic program information preparing and

transmitting apparatus according to claim 18 in which  
television programs provided by a particular broadcast service  
enterpriser are carried in a plurality of particular  
transmission lines, television programs of the sub-channel  
5 services are transmitted through one particular transmission  
line, the general electronic program information including  
information of the main channel services is transmitted  
through all transport streams, and the individual electronic  
program information including information of the sub-channel  
10 services is transmitted through each of the particular  
transmission lines.

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23. An electronic program information preparing and  
transmitting apparatus according to claim 18 in which sub-  
15 channel service specifying information is arranged in the  
general electronic program information or in the individual  
electronic program information to specify a particular sub-  
channel service selected from the sub-channel services in  
cases where the main channel service of the sub-channel  
20 services is tuned by the viewer.

24. An electronic program information preparing and  
transmitting apparatus according to claim 18 in which a viewer  
attribute is arranged as information of each sub-channel  
25 service, a particular sub-channel service, of which the viewer

attribute agrees with an attribute of the viewer, being selected from the sub-channel services.

25. An electronic program information preparing and  
5 transmitting apparatus according to claim 18 in which a genre is arranged as information of each sub-channel service, a particular sub-channel service, of which the genre agrees with a viewer favorite genre, being selected from the sub-channel services.

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26. An electronic program information preparing and transmitting method, comprising the steps of:

preparing general electronic program information described on a general level from electronic program information of a  
15 plurality of broadcast service enterprisers;

preparing individual electronic program information described on an individual level from the electronic program information of one broadcast service enterpriser for each broadcast service enterpriser; and

20 transmitting the general electronic program information of the broadcast service enterprisers and the individual electronic program information of the broadcast service enterprisers.

25 27. An electronic program information preparing and

transmitting method according to claim 26 in which the step of preparing individual electronic program information comprising the steps of:

5 preparing a plurality of information tables corresponding to a plurality of channel services as the individual electronic program information of each broadcast service enterpriser;

describing pieces of information of a plurality of television programs in each information table;

10 arranging program link describing information as the information of one television program for each information table to indicate that an actual television program actually broadcasted is the same as one or more virtual television programs not actually broadcasted. *A*

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28. An electronic program information preparing and transmitting method according to claim 26 in which the step of preparing individual electronic program information comprising the step of:

20 hierarchically listing one or more main channel services and one or more sub-channel services subordinate to one main channel service in the individual electronic program information.

25 29. An electronic program guide producing apparatus,

comprising:

electronic program information receiving means for receiving electronic program information of a plurality of broadcast service enterprisers;

5 common electronic program guide producing means for producing a common electronic program guide of channel services provided by the broadcast service enterprisers from the electronic program information of the broadcast service enterprisers received by the electronic program information  
10 receiving means; and

individual electronic program guide producing means for producing an individual electronic program guide of channel services provided by one broadcast service enterpriser from the electronic program information of the broadcast service  
15 enterpriser received by the electronic program information receiving means for each broadcast service enterpriser.

30. An electronic program guide producing apparatus according to claim 29, further comprising:

20 displaying means for displaying a television program of a channel service provided by a particular broadcast service enterpriser selected from the broadcast service enterprisers, displaying the common electronic program guide produced by the common electronic program guide producing means regardless of  
25 the particular broadcast service enterpriser, and displaying a

particular individual electronic program guide of the  
particular broadcast service enterpriser produced by the  
individual electronic program guide producing means while  
displaying the television program of the channel service  
5 provided by the particular broadcast service enterpriser.

31. An electronic program guide producing apparatus according  
to claim 30 in which a plurality of channel services are  
listed in the electronic program information of one broadcast  
10 service enterpriser received by the electronic program  
information receiving means, service specifying information  
indicating the specifying of a particular channel service  
selected from the channel services is arranged in the  
electronic program information, and a television program of  
15 the particular channel service of the broadcast service  
enterpriser is automatically displayed by the displaying means  
in cases where the viewer selects the broadcast service  
enterpriser.

20 32. An electronic program guide producing apparatus according  
to claim 30 in which a plurality of channel services are  
listed in one individual electronic program guide produced by  
the individual electronic program guide producing means or in  
the common electronic program guide produced by the common  
25 electronic program guide producing means, a viewer attribute



is arranged as information of each channel service of the individual electronic program guide or the common electronic program guide, and a television program of a particular channel service of the broadcast service enterpriser is automatically displayed by the displaying means in cases where the viewer attribute of the particular channel service agrees with an attribute of the viewer in the individual electronic program guide or the common electronic program guide.

33. An electronic program guide producing apparatus according to claim 30 in which a plurality of channel services are listed in one individual electronic program guide produced by the individual electronic program guide producing means or in the common electronic program guide produced by the common electronic program guide producing means, a genre is arranged as information of each channel service of the individual electronic program guide or the common electronic program guide, and a television program of a particular channel service of the broadcast service enterpriser is automatically displayed by the displaying means in cases where the genre of the particular channel service agrees with a viewer favorite genre in the individual electronic program guide or the common electronic program guide.

34. An electronic program guide producing apparatus according

to claim 30 in which pieces of information of a plurality of television programs are described in one individual electronic program guide produced by the individual electronic program guide producing means or in the common electronic program guide produced by the common electronic program guide producing means, program link describing information indicating that an actual television program actually broadcasted is the same as one or more virtual television programs not actually broadcasted is arranged in the individual electronic program guide or the common electronic program guide, and the individual electronic program guide or the common electronic program information is displayed by the displaying means.

35. An electronic program guide producing apparatus according to claim 30 in which information of a particular program extending over a plurality of television channels is described in one individual electronic program guide produced by the individual electronic program guide producing means or in the common electronic program guide produced by the common electronic program guide producing means, and the information of the particular program is displayed by the displaying means as the individual electronic program guide or the common ~~electronic program guide~~.

36. An electronic program guide producing apparatus according  
to claim 30 in which information of a particular television  
program extending over a plurality of television channels is  
described in one individual electronic program guide produced  
5 by the individual electronic program guide producing means or  
the common electronic program guide produced by the common  
electronic program guide producing means, the information of  
the particular television program is described in each  
television channel of the individual electronic program guide  
10 or the common electronic program guide, the information of the  
particular television program described in each television  
channel is displayed by the displaying means as the individual  
electronic program guide or the common electronic program  
guide, and the selection of the particular television program  
15 is visually indicated in each television channel in cases  
where the particular television program of one television  
channel is selected.

37. An electronic program guide producing apparatus according  
20 to claim 30 in which display quality information is described  
as information of each television program in one individual  
electronic program guide produced by the individual electronic  
program guide producing means or in the common electronic  
program guide produced by the common electronic program guide  
25 producing means to indicate a display quality of the

television program, and pieces of information of the  
television programs are displayed by the displaying means as  
the individual electronic program guide or the common  
electronic program guide to indicate the display quality of  
5 each television program according to the display quality  
information of the television program.

38. An electronic program guide producing apparatus according  
to claim 30 in which information of one broadcast service  
10 enterpriser, information of a schedule and information of a  
television channel are described as information of each  
television program in one individual electronic program guide  
produced by the individual electronic program guide producing  
means or in the common electronic program guide produced by  
15 the common electronic program guide producing means, a  
transmission bandwidth is described as information of each  
television program in the individual electronic program guide  
or the common electronic program guide, and a three-  
dimensional electronic program guide composed of three  
20 components of the broadcast service enterpriser, the schedule  
and the television channel is displayed by the displaying  
means on condition that a display width of each television  
program in the three-dimensional electronic program guide is  
proportional to the transmission bandwidth of the television  
25 program.

39. An electronic program guide producing apparatus according to claim 30 in which information of television programs is described in one individual electronic program guide produced  
5 by the individual electronic program guide producing means or in the common electronic program guide produced by the common electronic program guide producing means, the information of the television programs is displayed by the displaying means as the individual electronic program guide or the common  
10 electronic program guide while displaying a television program of one television channel, and the electronic program guide producing apparatus, further comprises:

television channel changing means <sup>a</sup>for changing a television program of a first television channel to a television program  
15 of a second television channel in cases where the television program of the first television channel has no relationship with the television program of the second television channel and changing the television program of the first television channel to a television program of a third television channel  
20 in cases where the television program of the first television channel refers to the information of the television program of the second television channel, the television program of the second television channel refers to the information of the television program of the first television channel or the  
25 television programs of the first and second television

channels refers to the information of a television program of one television channel.

40. An electronic program guide producing apparatus according to claim 39 in which channel identifying information indicating the second television channel or the third television channel changed by the television channel changing means and one or more fourth television channels is displayed in cases where the second television channel or the third television channel and the fourth television channels refer to information of the same television channel, and channel identifying information indicating the second television channel or the third television channel changed by the television channel changing means and one or more fifth television channels is displayed in cases where the fifth television channels refer to information of the second television channel or information of the third television channel.


41. An electronic program guide producing apparatus according to claim 30 in which information of one or more main channel services and information of one or more sub-channel services subordinate to one main channel service are hierarchically described in one individual electronic program guide produced by the individual electronic program guide producing means or

in the common electronic program guide produced by the common electronic program guide producing means, and the information of the main channel services and the information of the sub-channel services hierarchically described are displayed by the displaying means as the individual electronic program guide or the common electronic program guide.

42. An electronic program guide producing apparatus according to claim 30 in which information of one or more main television programs and information of one or more sub-television programs subordinate to one main television program are hierarchically described in one individual electronic program guide produced by the individual electronic program guide producing means or the common electronic program guide produced by the common electronic program guide producing means, and the information of the main television programs and the information of the sub-television programs hierarchically described are displayed by the displaying means as the individual electronic program guide or the common electronic program guide.

43. An electronic program guide producing apparatus according to claim 30 in which information of a main television program and information of one or more sub-television programs subordinate to the main television program are hierarchically

described in one individual electronic program guide produced  
by the individual electronic program guide producing means or  
the common electronic program guide produced by the common  
electronic program guide producing means, the information of  
5 the main television programs is displayed by the displaying  
means as the individual electronic program guide, and the  
information of the sub-television programs is displayed by the  
displaying means as the individual electronic program guide or  
the common electronic program guide in cases where the main  
10 television program or a channel service of the main television  
program described in the information of the main television  
programs is selected.



44. An electronic program guide producing apparatus according  
15 to claim 30 in which information of a main television program  
and information of one or more sub-television programs  
subordinate to the main television program are hierarchically  
described in one individual electronic program guide produced  
by the individual electronic program guide producing means or  
20 the common electronic program guide produced by the common  
electronic program guide producing means, a viewer attribute  
is described as information of each sub-television program,  
and a particular sub-television program is automatically  
displayed by the displaying means, on condition that the  
25 viewer attribute described as the information of the



particular sub-television program agrees with an attribute of the viewer, in cases where the viewer selects the main television program.

5 45. An electronic program guide producing apparatus according to claim 30 in which information of a main television program and information of one or more sub-television programs subordinate to the main television program are hierarchically described in one individual electronic program guide produced  
10 by the individual electronic program guide producing means or the common electronic program guide produced by the common electronic program guide producing means, a genre is described as information of each sub-television program, and a particular sub-television program is automatically displayed  
15 by the displaying means, on condition that the genre described as the information of the particular sub-television program agrees with a viewer favorite genre, in cases where the viewer selects the main television program.

20 46. An electronic program guide producing apparatus according to claim 30 in which one of a plurality of sub-services is selected in cases where a main service is selected by the ~~viewer~~.

add B<sup>37</sup>